CREATING EFFECTIVE DEFENSIBLE SPACE
...A Step-by-Step Guide

Defensible space is the area between your home and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat. This space between your home and an approaching wildfire ensures that your home can survive on its own without extensive effort from either you or the fire department.

Defensible space also provides room for firefighters to "make a stand" in protecting your home. Without adequate defensible space, firefighters may have to bypass your home, choosing a structure they have a better chance of saving.

Many people do not view the plants growing on their property as a threat. But in terms of wildfire, the vegetation adjacent to their homes can have considerable influence upon the survivability of their houses. All vegetation, including plants native to the area as well as ornamental plants, is potential wildfire fuel. If vegetation is properly modified and maintained, a wildfire can be slowed, the length of flames shortened, and the amount of heat reduced, all of which assist firefighters in defending the home against an oncoming wildfire.

It has been shown that in investigations of homes threatened by wildfire, houses with an effective defensible space are much more likely to survive a wildfire. Furthermore, homes with both an effective defensible space and a nonflammable roof are many time more likely to survive a wildfire that those without defensible space and flammable roofs.

This information sheet presents six steps that you can use as a guide to develop defensible space for your home and property:

Step One: How Big Is An Effective Defensible Space?

The size of the defensible space area is usually expressed as a distance extending outward from the sides of the house. This distance varies by the type of wildland vegetation growing near the house and the steepness of the terrain.

On the **Defensible Space Distance** chart presented below, find the vegetation type and percent slope that best describes the area where your house is located. Then find the recommended defensible space distance for your situation.

Defensible Space
Recommended Distances Based on Steepness of Slope

	Flat to Gentle Slopes (0-20%)	Moderately Steep (21-40%)	Very Steep (over 40%)
Grass	30 feet	100 feet	100 feet
Shrubs	100 feet	200 feet	200 feet
Trees	30 feet	100 feet	200 feet

For example, if your property is surrounded by wildland grasses such as sagegrass and is located on flat land, your recommended defensible space distance would extend 30 feet from the sides of the house. If your house is on a 25 percent slope and the adjacent wildland vegetation is dense tall brush, your recommended defensible space distance would be 200 feet. If the recommended distance goes beyond your property boundaries, contact the adjacent property owner and work cooperatively on creating a defensible space.

The effectiveness of defensible space increases when multiple property owners work together. The local assessor's office can provide assistance if the owners of adjacent properties are unknown. However, **do not work on someone else's property without their permission.**

Temporarily mark the recommended distance with flagging or strips of cloth tied to shrubs, trees or stakes around your home. This is your defensible space area.

Step Two: Is There Any Dead Vegetation Within The Recommended Defensible Space Area?

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to living plants, dried grass, flowers and weeds, dropped leaves and needles. In most instances, dead vegetation should be removed from the defensible space area. A description of the types of dead vegetation and recommended practices are listed below:

Dead Fuel Type	Recommended Practice
Standing Dead Tree	Remove all standing dead trees from within the defensible space area.
Downed Dead Tree	Remove all downed dead trees within the defensible space area if they have recently fallen and are not yet embedded into the ground. Downed trees that are embedded into soil and which cannot be removed without soil disturbance should be left in place. Remove all exposed branches from an embedded downed dead tree.
Dead Shrubs	Remove all dead shrubs from within the defensible space area.
Dried Grasses	Once grasses and wildflowers have dried out or "cured," cut down and remove from the defensible space area.
Dead Needles, Leaves, Branches (on the ground)	Reduce thick layers of pine needles to a depth of two inches. Do not remove all needles. Take care not to disturb the "duff" layer (dark area at the ground surface where needles are decomposing) if present. Remove dead leaves, twigs, cones and branches.
Dead Needles, Leaves, Branches (other than on the ground)	Remove all dead leaves, branches, twigs and needles still attached to living trees and shrubs to height of 15 feet above ground. Remove all debris that accumulates on the roof and in rain gutters on a routine basis (at least once annually).
Firewood and other Combustible Debris	Locate firewood and other combustible debris (wood scraps, grass clippings, leaf piles, etc.) at least 30 feet uphill from the house.

Step Three: Is There A Continuous Dense Cover Of Shrubs Or Trees Present within the Recommended Defensible Space Area?

Sometimes wildland plants can occur as an uninterrupted layer of vegetation as opposed to being patchy or widely spaced individual plants. **The more continuous and dense the vegetation, the greater the wildfire threat**. If this situation is present within your defensible space area, you should "break-it-up" by providing a separation between plants or small groups of plants.

Not only are steep slopes often considered high wildfire areas, they are also highly erodable. When removing shrubs and trees from steep slopes, keep soil disturbance to a minimum. Also, it may be necessary to replace flammable vegetation with other plant materials to prevent excessive soil erosion.

Note: Separation distances are measured between canopies (outer most branches) and not between trunks.

For example, if your house is situated on a 30 percent slope, the separation of tree canopies within your defensible space should be 20 feet. Creating separation between tree canopies can be accomplished through tree removal.

Step Four: Are There Ladder Fuels Present Within The Recommended Defensible Space Area?

Vegetation is often present at varying heights, similar to the rungs of a ladder. Under these conditions, flames from fuels burning at ground level, such as a thick layer of pine needles, can be carried to shrubs that can ignite still higher fuels like tree branches. Vegetation that allows a fire to move from lower growing plants to taller ones is referred to as "ladder fuels." The ladder fuel problem can be corrected by providing a separation between the vegetation layers.

Within the defensible space area, a vertical separation of three times the height of the lower fuel layer is recommended. For example, if a shrub growing adjacent to a large pine tree is three feet tall, the recommended separation distance would be nine feet. This could be accomplished by removing the lower tree branches, reducing the height of the shrub or both. The shrub could also be removed.

For forested areas, the recommended amount of separation between tree canopies is determined by the steepness of slope. The specific recommendations are presented above.

THE LEAN, CLEAN AND GREEN CHECKLIST

- ❑ Emphasize the use of low growing herbaceous (non-woody) plants that are kept green during the fire season through irrigation if necessary. Herbaceous plants include grass, clover, a variety of groundcovers, bedding plants, bulbs, perennial flowers and conservation grasses.
- ❑ Emphasize use of mulches, rock and non-combustible hard surfaces (concrete sidewalks, brick patios and asphalt driveways).
- ❑ Deciduous ornamental trees and shrubs are acceptable if they are kept green and free of dead plant material, ladder fuels are removed and individual plants or groups of plants are arranged so that adjacent wildland vegetation cannot convey a fire through them to the structure. Shorter deciduous shrubs are preferred.
- ❑ Minimize the use of ornamental coniferous shrubs and trees (such as juniper, arborvitae, and mugo pine) and tall exotic grasses (such as pampas grass).
- ❑ Where permitted, most wildland shrubs and trees should be removed from this zone and replaced with more desirable alternatives (see first box). Individual specimens or small groups of wildland shrubs and trees can be retained so long as they are kept healthy and free of dead wood, are pruned to reduce the amount of fuel and height and ladder fuels are removed.
- ❑ For some areas, substantial removal of wildland vegetation may not be allowed. In these instances, wildland vegetation should conform to the recommendations presented in steps 2 through 4. Please become familiar with local requirements before removal of wildland vegetation.
- ❑ Tree limbs within 15 feet of a chimney, encroaching on powerlines or touching the house should be removed.

Step Five: Is There An Area At Least 30 Feet Wide Surrounding Your House That Is "Lean, Clean And Green"?

The area immediately adjacent to your house is particularly important in terms of an effective defensible space. It is also the area that is usually landscaped. Within an area extending **at least** 30 feet from the house, the vegetation should be kept....

- Lean—small amounts of flammable vegetation,
- Clean—no accumulation of dead vegetation or other flammable debris and
- Green—plants are healthy and green during the fire season.

The "Lean, Clean and Green Zone Checklist" will help you evaluate the area immediately adjacent to your house.

Step Six: Is The Vegetation Within the Recommended Defensible Space Area Maintained On A Regular Basis?

Keeping your defensible space effective is a continual process. At least annually, review these defensible space steps and take action accordingly. An effective defensible space can be quickly diminished through neglect.

TENNESSEE FORESTRY DEPARTMENT OF AGRICULTURE

For more information about the Tennessee Firewise Communities Program, contact the Tennessee Department of Agriculture, Division of Forestry, P.O. Box 40627, Nashville, TN 37204; 615-837-5537; Fax: 615-837-5129 or visit our Web site at:
www.state.tn.us/agriculture/forestry